PE 6 P 100 A 320 RS 384 Z RQ 250/1100 PA 517 D

supersedes -
company: DAF
engine: DKL 1160

Port closing difference between control-rod travel 9 mm and control-rod travel 21 mm.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) / 3,20-3,30 RW 9 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11,5+0,1	10,9 - 11,2	0,5			
225	7,2-7,4	1,0 - 1,4				
1050	-	C. Sp. 4-5	0,3			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	10,8	1140-1155	225	7,3	100	min.7,5		
								225	7,2-7,4		
				4,0	1175-1205			325-600	365=2,0 max.1,0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
600	109,5 - 112,5		1050	106,5 - 111,5	100	21,5
						7,2

Checking values in brackets

8.80

A2

Test Specifications Fuel Injection Pumps ① and Governors

'40

VDT-WPP 001/4 SCA 11,0 k 1
1. Edition

En

supersedes -
company: Scania
engine: D 11 - 190 PS

PE 6 P 90 A RS 276 RQV 250-1100 PA241

Port-closing test with/without ROBO diaphragm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	8,5 - 9,2	0,4			2,5 ± 0,1 ** (max.2,2-2,9)
600	9	2,9 - 3,9				
	12	7,4 - 8,4				
	15	12,2 -13,5				
200	9	1,8 - 2,8				

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in [ ].

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1150	15,0-18,2	-	-	-	ca.10	200	5,8-8,0	200	0 -1,0
	1380	0 - 1,5					300	3,1-4,4	350	2,0-2,5
ca.62	1100	15,0-17,8					400	2,6-3,6	600	4,3-4,7
	1150	10,2-13,8					500	1,8-3,0	1150	8,3
	1200	5,0-10,0					600	0,8-2,0		
	1250	0 - 5,6					780	0	-	-
	1320	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1080	142,0-144,0	1135-1145*	500	135,0-139,0	100	220 - 270		
					225	8 - 11 dispersion.max.	1,5)*	
					1200	14 - 24 dispersion.max.4		

Checking values in brackets

*1 mm less control rod travel than col. 2

2.76

A4

Test Specifications Fuel Injection Pumps ① and Governors

'40

WPP 001/4
1. Edition

En

PE 8 P 120 A 920/4 RS3030 RQV 350/575-750 PA273R

supersedes -
company: Rolls Royce
engine: C 8 T (340)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,50-3,60 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
720	13,8 (+0,1)	24,7 - 25,1	0,5(0,8)			
350	6,0	- - -				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
ca.68	750 790 860	15,0-18,6 0 - 8 0	ca.45	550 600 670 685	11,8-17,6 7,3-12,0 0 - 2 0	ca.12 ③a	300 450 550 625	6,3-8,2 3,6-4,0 1,6-4,0 0	325 400- 750	0,4-1,5 500= 1,9-2,1 8,3
									-	-

Torque control travel a = mm

C. Settings for Fuel injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
720	247,0-251,0 (244,0-254,0)	760 - 770			100	ca.16 mm RW		

Checkir ..es in brackets

? 1 mm less control rod travel than col. 2

8.77

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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A5

A5

Test Specifications Fuel Injection Pumps ① and Governors

'40

WPP 001/4

1. Edition

En

PE 6 P 110 A 320 RS 328 RQV 300-1500 PA 303 R

supersedes

company:

engine:

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 + 0,1 mm (from BDC) 21 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	17,3 - 18,0				
600	6,0	5,2 - 6,4				
	15,0	10,7 - 22,6				
200	6,0	1,9 - 2,9				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.64	1540	15,0-17,6				ca.11°	200	6,8-8,0	1540	8,2
	1600	11,0-14,8					440	3,6-5,0		
	1700	2,6- 9,2					600	2,6-3,8		
	1800	0 - 3,2					900	0 -1,2		
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
ca. 10 mm RW - Carry out adjustment on engine		1540						

Checking values in brackets

*: 1 mm less control rod travel than col. 2

A7

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 PEN 7,0 e
1. Edition

PE 6 P 100 A 320 RS386 EP/RSV 200-1200 P 1/305R En

supersedes -
company Volvo-Penta
engine MD 70 C

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	8,6-8,7	7,2 - 7,4	0,4(0,8)			2,5±0,1
225	5,8-6,0	0,9 - 1,3	0,2(0,5)			(max.2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0			ca.27	225	5,4		
	x = 5,2				100	min 20		
ca.67	1240-1250 = 7,6				225	5,8-6,0		
(2a)	1270-1300 = 4,0				335-395	= 2,0		
	1400 0,3 - 1,7				550	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	72,0 - 74,0 (69,0 - 77,0)	1240-1250*			100	210 - 260		
					225	10 - 14		

Checking values in brackets

* 1 mm less control rod travel than col 2

5.79

A10

A 10

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MWM 21,6 a
1. Edition

En

PE 12 P 120 A 520/5 RS 428 RSUV 300-1150 POA 324 DR

1 - 2 - 9 - 10 - 5 - 6 - 11 - 12 - 3 - 4 - 7 - 8
je 30° ± 0,5° (± 0,75°)

supersedes -
company MWM
engine D 234 V 12
330 kW (449 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,6-9,7	17,0 - 17,4	0,5(0,9)			
300	6,5-6,7	2,8 - 3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ▭

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.22	300	6,1	-	-
	x =	4,0					300	6,5-6,7		
ca.64 (2a)	8,6	1190-1200					410-470	=2,0mm		
	4,0	1235-1265								
	1400	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	170,0-174,0 (167,0-177,0)	1190-1200*	-	-	100	240,0-260,0 / 15,8 - 16,0 mmRW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.82

A18

A18

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 PEN 7,0 g 1
1. Edition

En

PE 6 P 110 A 320 RS 390 RSV 200-1200 P4/305

supersedes -
company Volvo-Penta
engine TD 70 GG

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95- 3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,3+0,1	10,0 - 10,2	0,4(0,8)			2,5 ± 0,1
200	6,1-6,3	1,7 - 2,7	0,25(0,55)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 x = 4,0	0,3-1,0	-	-	-	ca.20	200	5,7		
							100	min.10,0		
ca.70 (2a)	10,3	1240-1250					200	6,1-6,3		
	4,0	1250-1280								
	1400	0,3 -1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	100,0-102,0 (97,0-105,0)	1240-1250*	-	-	100	10,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

A21

A21

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 SCA 11,0 q
2. Edition

En

PE 6 P 110 A 720 RS 310 EP/RSV 350-1100 P 1/310 R

supersedes -
company Scania
engine DSI 11

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	14,0 (±0,1)	19,3 - 19,5	0,6(0,8)			2,5±0,1** (max.2,2-2,9)
350	5,5 (±0,1)	1,0 - 1,4	0,2(0,7)			
600	14,0 (+0,1)	19,4 - 19,8	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ]

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.67	1100	16,0	without auxiliary spring	ca.31	350	6,0		
	1150	11,7			100	19 - 21		
	1200	6,0			350	5,7-6,3		
	1150	10,4-12,5	with auxiliary spring		400	3,2-4,7		max.
(2a)	1200	4,4- 7,8			550	0 - 1		
	1350	0,3- 1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	193,0-195,0 (190,0-198,0)	1140-1150*	600	194,0-198,0 (191,0-201,0)	350	12 - 16 dispersion max. 2,0)**		
					1200	28 - 33 (ca.RW 5,5mm)		

Checking values in brackets

* 1 mm less control rod travel than col 2

5.76

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A24

A24

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 DAF 11,6 b
2. Edition

En

PE 6 P 90/320 RS142 RQ 200/1000 PA98/1R
PE 6 P 90A320 RS239

supersedes 8.72
company: D A F
engine: DKDL 1160

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) (+0,15 / -0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	10,4 - 11,2	0,5			
600	9	4,5 - 5,9				
	12	9,1 - 10,8				
	15	14,0 - 15,9				
200	9	3,5 - 4,5				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
450	15,7-16,3	450	16,0	1050	15,6-16,0	430	0	100	6,0-8,1		
				1080	9,6-14,0			200	3,4-5,6		
				1120	0 - 7,7			300	0 -1,6		
				1160	0 - 1			330	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
850	107,7 - 109,5 (105,5 - 111,5)					

Checking values in brackets

2.77

B7

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung.

B7

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4
1. Edition
En

PES 6 P 110 A 720/3 RS 3036 RQV 300/450-900 PA 372KR

supersedes
company: Mack
engine: ETAY 673 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,35-2,45 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,2	22,8 - 23,0	0,6			
300	5,0	1,2 - 2,2	0,2			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	Sliding sleeve travel 1: rev/min 10	mm 11
ca.69	970 1050 1100 1200	15,5-18,0 7,0-11,6 1,7- 7,8 0	-	-	-	ca.19 3a	250 300 600 700	9,8-11,3 7,5- 8,5 1,3- 2,5 0 - 1	200 500 800 960	0,2-1,2 4,0-4,4 6,3-6,7 8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed 2b: rev/min 4a 3	Fuel delivery characteristics high idle speed 5a 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point 6: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9
900	228,0-230,0	940-950*	725 600	234,0-238,0 228,0-232,0 PLE: 0.740-0.820	100 300 300	110,0-170,0 14,0- 24,0 94,0-109,0		

Checking values in brackets

* 3 mm less control rod travel than col. 2

10.79

Test Specifications Fuel Injection Pumps ① and Governors

'40

WPP 001 Fiat 13,8 e
2. Edition

En

PES 6 P 120 A 820 RS3058 RQV 300-1300 PA454KR

supersedes
company: 2.80
engine: Unic-Fiat 8220-02-142

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,60-3,70 (3,55-3,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	9,2-9,3	14,3 - 14,7	0,5(0,8)			
300	5,1-5,3	1,7 - 2,3	0 (0,7)			
500/700	- -	C, 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ①: rev/min 10	mm 11
ca.68	1300	15,2-17,8	-	-	-	ca.14	100	min.6,7	300	1,0-2,0
	1550	0 - 1					300	5,1-5,3	600	3,5-4,0
ca.60	8,2	1340-1350				320-430 ③a			1320	8,3
	4,0	1410-1440								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1300	143,0-147,0 (140,0-150,0)	1340-1350*	500	103,0-109,0 (100,0-112,0)	100	150,0-170,0	1300	9,2-9,3
							900	9,1-9,3
			700	123,0-129,0 (120,0-132,0)			700	8,8-9,0
					100-220 (80-240)		500	8,6-8,7

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.80

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Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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B16

B16

Test Specifications Fuel Injection Pumps ① and Governors

'40

WPP 001/4
3. Edition

En

PE 6 P 120 A 321 RS 359 RQV 250-1200 PA 254R

supersedes 3.78
company: Berliet
engine: MID 62030 (175 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,50-3,60 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,3	14,3-14,7	0,5(0,9)			
	(+0,1)					
250	5,6-5,8	1,2- 1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1200	15,2-17,8	-	-	-	ca.13	100	min.7,2	200	0,3-1,1
	1450	0 - 1					250	5,6-5,8	800	4,3-4,7
ca.66	9,5	1240-1250					530-570	=2,0	1190	8,3
	4,0	1300-1330					720	0 - 1		
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	139,0-143,0 (136,0-146,0)	1240-1250*			100	140,0-190,0		
					100	-170(80-190)		

Checking values in brackets

*1 mm less control rod travel than col. 2

10.78

B19

0A9

Test Specifications Fuel Injection Pumps ① and Governors

'40

WPP 001/4
3. Edition

En

PE 6 P 120 A 320 RS 341 RQV200-1100 PA 322 DR

supersedes
company: AEC
engine: L 12

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2-10,3	18,0 - 18,4	0,5(0,8)			
225	7,6-7,8	3,5 - 4,1	0,4(0,7)			
600/500	-	C, 4-5	0,7(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1100 1300	15,2-17,8 0 - 1,0				ca.29	100 225 330-190=2,0	min.9,2 7,6-7,8	225 425 1150	1,4 3,3-3,4 7,9
ca.58	9,3 4,0	1140-1150 1180-1210								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1100	180,5-184,5 (177,5-187,5)	1140-1150*	600	132,0-138,0 (129,0-141,0)	100	100,0-130,0	1100	10,2-10,3
					225	35,0- 41,0	500	10,7-10,9
			500	120,0-124,0 (117,5-127,5)	100-	150(80-170)	600	10,7-10,9

Checking values in brackets

*1 mm less control rod travel than col. 2

11.79

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

B20

080

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 9,8a
2. Edition
En

PES 6 P 110 A 820 RS381 RQV 225-1300 PA 430/2R

supersedes 1.79
company: Unic-Fiat
engine: X 200

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	9,6-9,7	10,2 - 10,4	0,4(0,8)			
225	6,8-7,0	1,6 - 2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1300 1600	15,2-17,8 0 - 1	-	-	-	ca.11	100 225 460-520	min.8,5 6,8-7,0 = 2,0	225 450	0,8-1,0 2,8-3,2
ca.58	8,6 4,0	1340-1350 1425-1455				(3a)	600	0 - 1	1350	8,5

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1300	102,0-104,0 (99,0-107,0)	1340-1350*			100	170,0-210,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

2,79

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B23

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PEN 10,0 c
1. Edition
En

PE 6 P 110 A 320 RS138 RQV 250-1100 PA401/2R

supersedes
company: Volvo-Penta
engine: HD 100 D
177 kW (240PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,60-2,70 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	8,6-8,7	8,7-8,9	0,4(0,8)			2,5±0,1** (max.2,2-2,9)
250	5,6-5,7	0,8-1,2	0,25(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ].

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.50	1100	15,2-17,8	-	-	-	ca.11	100	min.8,4	200	0,2-0,8
	1400	0 - 1					250	5,6-5,7		
ca.45	7,6	1160-1170					345-365 = 2,0		1170	8,2
	4,0	1205-1230					500	0 - 1		
						(3a)			-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	87,0-89,0 (84,0-92,0)	1160-1170*			100	300 - 340		
					250	10 - 14	**	
					dispersion.max.2,5)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.78

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4
2. Edition
En

PE 6 P 100 A 720 RS 414 RQ 300/1175 PA 507

supersedes
company: 4.80
engine: F B W
CU 6 A

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300 ±0,50(0,75)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) 2,80-2,90 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1175	12,4	12,3 - 12,5	0,3(0,6)			
300	+0,1 8,1-8,3	1,7 - 2,3	0,3(0,5)			
600	-	C, Sp. 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	11,4	1220-1235	300	6,0	100	min.7,5	1175	12,4-12,5
				4,0	1285-1315			300 390-	5,9-6,1 430=2,0	600	12,4-12,6

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA 1175	0,7 bar 123,0 - 125,0 (121,0 - 127,0)		LDA 600	0,7 bar 116,0-120,0 (113,0-123,0)	100	120,0 - 140,0
			LDA 600	0 bar 81,0 -85,0 (78,0 -88,0)	300	8,1

Checking values in brackets

6.81

C3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel mm (1)	diminution / difference
414 - 507	0,7 bar			12,6 - 12,7
		0,35		12,0 - 12,1
		0,25		11,1 - 11,3
		0		10,7 - 10,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4
1. Edition

En

PES 6 P 120 A 420RS 3028 RQ 300/1100PA193DR
3028 RQV250-1100PA194DR

supersedes
company: Saurer-Arbon
engine: D2 KT290

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,9 (+0,1)	22,8 - 23,2	0,5(0,8)			
1100/700	Section	C, col.4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQ..193 DR

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,9	1145-1160	300	6,0	100	mind.7,5	1100	11,9-12,0
				4,0	1200-1240			300	5,9-6,1	500	11,9-12,0
1120 1300	14,6-15,0 0 - 1							440 -	480=2,0		

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes Control rod travel mm 7
LDA 1100	0,7 bar 228,0-232,0 (225,0-235,0)		LDA 700	0,7 bar 200,0-205,0 (197,0-208,0)	100	170,0-190,0
			LDA 1100	0 bar 178,0-184,0 (175,0-187,0)		

Checking values in brackets

11.71

C5

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm (1) (+0,1)
1	2	3	4	5	6	7	8	9	10	11
ca.68°	1100 1380 1145 1220	15,2-17,8 0 - 1 ca.10,9 ca. 4,0				ca.12° (3a)	100 250 410-	mind.7,6 5,9- 6,1 490= 2,0	1100 500	11,9 11,9

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1100	0,7 bar 228,0-232,0 (225,0-235,0)	1140-1150*	LDA 700	0,7 bar 200,0-205,0 (197,0-208,0)	100	170,0-190,0		
			LDA 1100	0 bar 178,0-184,0 (175,0-187,0)				

...ting values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel-diminution difference mm
3028 - 194DR	0,68		11,9 - 12,0
3028 - 193DR		0,22	11,3 - 11,5
		0,13	10,5 - 10,6
		0	10,1 - 10,2

En

C6

C6

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 DAF 8,3 h
2. Edition

En

PE 6 P 100 A 720 RS343 RQ 250/1200 PA331R
EP/RSV 250-1200 P 0/417R./.

supersedes 6.76
company: van Doorne
engine: DHU 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5 + 0,1 mm (from BDC) (+ 0,15 / − 0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,4 - 11,7	0,5			
600	9	4,2 - 5,0				
	15	15,6 - 17,0				
200	9	1,9 - 3,3				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQ ... 331 R

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,7-16,3	700	16,0	1220	15,6-16,0	650	0	150	6,4-8,1	-	-
				1250	10,4-15,0			250	5,0-7,0		
				1320	0 - 7,8			400	2,2-4,4		
				1400	0 - 1			500	0		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1245-1260 - 0,7 bar

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp. 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA	0,7 bar		LDA	0 bar		
1000	127,0 - 130,0 (125,0 - 132,0)		500	89,0 - 93,0 (87,0 - 95,0)		

./.

Checking values in brackets

8.76

C7

C7

The numbers denote the sequence of the tests

B. Governor Settings

EP/RSV . 417R

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.55	1200	16,0	without auxiliary spring			ca.28	250	7,0	400	0
	1300	9,9					100	19 - 21		
	1350	5,9					250	6,7-7,3	300	1,2-1,8
ca.53	1200	12,4-12,5	with auxiliary spring				400	1,0-3,0		
(2a)	1300	5,0- 6,8					530	0 - 1		
	1430	0,3- 1,0								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	Note: changed to ...) rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar		LDA	0 bar				
1000	127,0-130,0	1270-1280*	500	89,0-93,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing ~~increasing~~ pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
343 - 331R	0,49		- 0,1 - 0,2
+ 417R		0,23	- - - - - -

Notes:

(1) when n = 1000 rev/min and gauge pressure = 0,7 bar (= maximum full-load control rod travel)

En

C8

C8

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 FBW 11,9 a
1. Edition
En

PE 6 P 120 A 721 RS 446 RQ 250/1025 PA 619

supersedes -
company: FBW
engine: EU 5 A/ESA

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8±0,1	19,6 - 20,0	0,5(0,8)			
250	7,0-7,2	3,5 - 4,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,5-16,4	550	16,0	9,8 4,0 1250	1070-1085 1135-1165 0 - 1,0	250	7,1	100 250	min.8,6 7,0-7,2	1000 825 600	10,8-10,9 10,9-11,2 11,5-11,7

Torque-control travel on flyweight assembly dimension a = 0,5 mm

Speed regulation: At 1070-1085 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes; Control rod travel mm 7
LDA 1000	0,7 bar 196,0-200,0 (193,0-203,0)		LDA 600	0,7 bar 174,0-180,0 (172,0-182,0)	100	150,0-170,0
			LDA 600	0 bar 126,0-130,0 (123,0-133,0)		

Checking values in brackets

10.81

C9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P..RS 446 - ..PA 619	0,7		11,5 - 11,6
		0	9,4 - 9,5
		0,5	10,9 - 11,0
		0,41	9,9 - 10,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/$ SAU 12,0 a
1. Edition

En

PES 6 P 120 A 420 RS 3063 RQ 300/1000 PA 515

1 - 4 - 2 - 6 - 3 - 5 je 60°

supersedes -
company: Saurer
engine: D3 KT 80,1

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) 3,20-3,30 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2 + 0,1	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,2	20,7 - 21,1	0,5(0,8)			
300	5,7-5,8	1,3 - 1,9	0,8(1,2)			
700/400	-	C, Sp.4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	15,6-16,4	650	16,0	10,2	1045-1060	300	5,8	100	min.7,5	1000	11,2-11,3
1250	0 - 1			4,0	1090-1120			300 380-420	5,7-5,9 = 2,0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1000	0,7 bar 207,0-211,0 (214,0-224,0)		LDA 700 LDA 400	0,7 bar 196,0-200,0 (193,0-203,0) 0 bar 119,0-123,0 (116,0-126,0)	100	230,0-240,0

Checking values in brackets

8.80

C11

D. Adjustment Test for Manifold Pressure Compensator

SAU 12,0 a

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1) .
3063 - 515	0,7 bar		11,2 - 11,3
		0,38	11,1 - 11,2
		0,25	10,0 - 10,1
		0	9,7 - 9,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 11,6 n
2. Adition

En

PE 6 P 110 A 320 RS 407 RQ 250/1100 PA 428/2R

supersedes 10,79
company: DAF
engine: 1160 (185kW-252PS)

Se Service Information I-DAF 004!

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,3-12,4	13,9 - 14,1	0,4(0,8)			
250	7,0-7,2	0,9 - 1,3	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	11,3	1145-1160	250	7,1	100	mind.8,5	-	-
				4,0	1200-1230			250	7,0-7,2		
1350	0 - 1,0							345-450	385=2,0 0 - 1		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
LDA	0,5 bar		LDA	0 bar	100	245,0-285,0
850	139,5-141,5 (136,5-144,5)		600	135,5-138,5 (132,5-141,5)	250	(Electromagnet 24V) 11 - 15

Checking values in brackets

8.81

C17

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 n

Test at n = 600 rev/min decreasing / increasing (XXXXXX) pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
..RS 407 -	0,7		12,3 - 12,4
..PA 428/2R		0,3	12,1 - 12,2
		0	12,0 - 12,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

'40

WPP 001/4 SCA 11,0 i
3. Edition

En

PE 6 P 100 / 720 RS145, 202 RQV 250-1100 PA58,168
RS145Z PA106
RS145, 202 PA153, 167
RS145Z,202Z PA153, 167

supersedes 5.75
company: Scania
engine: DS 11 A

Port-closing test with/without ROBO diaphragm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,6 - 12,1	0,5			2,5±0,1** (max.2,2-2,9)
600	9	3,7 - 4,9				
	12	9,5 - 10,9				
	15	15,0 - 16,8				
200	9	2,4 - 3,4				

Adjust the fuel delivery from each outlet according to the values in [ ].

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

Testoil-ISO 4113

B. Governor Settings

RQV .. 58, 106, 153, 167

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.66	1100	14,0-16,8				ca.10	210	5,7-8,0	1100	8,4
	1150	9,2-13,3					270	3,4-6,0		
	1200	3,6- 9,6					370	2,2-3,8		
	1230	0 - 7,2					430	1,4-2,7		
	1310	0					570	0 -1,2		
						(3a)	650	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100 (14,5	0,5 bar 159,0-161,0 ± 0,5mmRW) (increase by 1,0 cm³)	1120	LDA 600	0,5 bar 154,0-158,0	100	190 - 240		
			LDA 500	0 bar 128,0-132,0	225	9 - 13 dispersion max.1,5)**		
					1200	39 - 44 dispersion max.4)		./.

Checking values in brackets

** 1 mm less control rod travel than col. 2

1.77

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C23

B. Governor Settings

RQV .. 168 SCA 11,0 i

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1120 1200 1300 1410	15,0-17,6 9,2-13,6 1,0- 7,6 0	-	-	-	ca.10 (3a)	150 250 400 500	6,5-8,0 3,6-6,1 1,1-2,4 0	1120	8,3

Torque control travel a = mm

Ppe 145Z
Ppe 202Z

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1100 (13,5	0,5 bar 144,0-146,0 ± 0,5 mmRW)	1120	LDA 500	0 bar 128,0-132,0	100 225 dispersion max.1,5)** 1200	190 - 240 9 - 13 39 - 44 dispersion max.4)		

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing (XXXXXXX) pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1) (2)
145 - 58 202 - 168)	0,26-0,28	0,14-0,17	-0,1 (1) -1,0 (1) ca.1,2 (2)
145 - 153 202 - 167)	0,40-0,44	0,24-0,28	-0,1 (1) -1,0 (1) ca.1,2 (2)
145Z - 106	0,19-0,22	0,15-0,18	-0,1 (1) -0,4 (1) ca.0,6 (2)
145Z - 153 202Z - 167)	0,19-0,21	0,14-0,16	-0,1 (1) -0,4 (1) ca.0,6 (2)

En

Testoil-ISO 4113

C24

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 SCA 11,0 p
6. Edition

En

PE 6 P 110 A 720 RS 3017 RQV 200-100 PA 283KR
RS 3014 EP/RSV 350-1100 P 1/310R./.

supersedes 2.76
company: Scania
engine: DS 11

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 + 0,1 mm (from BDC) (+0,15 / -0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,5-14,1	0,5			2,5 + 0,1 (max.2,2-2,9)**
600	15	19,7-21,4				
200	9	4,2- 5,2				

Adjust the fuel delivery from each outlet according to the values in [ ].

** In the case of greater dispersion alter the delivery-valve spring pre-tensior accordingly

B. Governor Settings

RQV .. 283KR

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.64	1130	15,0-17,0	-	-	-	ca.13	90	7,4-8,0	200	0,2-1,3
	1200	9,2-13,6					180	5,8-8,0	500	3,8-4,4
	1250	5,3-10,8					270	2,8-5,4	900	6,2-6,6
	1310	0 - 7					300	2,3-4,2	1120	8,3
	1410	0					400	1,3-2,3		
						(3a)	500	0		

Torque control travel a = mm - Section C, col. 8

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0,7 bar	100	190 - 240	1100	13,5
850	156,0-158,0	1135-1145*	1100	175,0-181,0			850	12,7
			LDA	0 bar	225	9 - 13**	700	12,8
			500	133,0-137,0		dispersion max. 2	600	12,9
					1200	25,5-35,5		
						dispersion max.4		

./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.76

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D1

The numbers denote the sequence of the tests

EP/RSV .. 310R

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4)	Lower rated speed		(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.67	1100 1150 1200	16,0 11,7 6,0	without auxiliary spring			ca.31	350	6,0		
							100 350 400 550	19 - 21 5,7-6,3 3,2-4,7 0 - 1		
(2a)	1150 1200 1350	10,4-12,5 4,4- 7,8 0,3- 1,0	with auxiliary spring							

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat. Note: changed to ...)	(3a) Fuel delivery characteristics		Starting fuel delivery idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	161,0-163,0	1135-1145*	600	162,5-165,5	100	190-240		
					350	10- 14)** dispersion max.2 (4)		
			1200	28,0- 33,0 dispersion max.4)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 850 rev/min decreasing / increasing pressure – in bar gauge pressure

XXXXXXXX

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel-diminution difference mm (1)
3017 - 283KR	0,40 - 0,42	0,20 - 0,24	0,1 1,0

Notes:

(1) when n = 1100 rev/min and gauge pressure = 0,7 bar (= maximum full-load control rod travel)

En

Testoil-ISO 4113

D2

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 SCA 8,0 c
1. Edition

En

PE 6 P 110 A 720 RS 3012 RQV 200-1200 PA 275
PE 6 P 110 A 720 RS 3013 EP/RSV 350-1200 P1/310

supersedes -
company: Scania
engine: DS 8

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3+0,1 ($^{+0,15}_{-0,05}$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,5 - 12,0	0,6			2,5 ± 0,1** (max.2,2-2,9)
600	15	15,9 - 17,4				
200	9	2,3 - 3,3				

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQV .. 275

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.66	1240 1300 1430 1590	15,0-17,6 11,3-14,9 2,2- 8,5 0	-	-	-	ca.10	100 250 400 530	6,4-8,0 3,9-6,0 1,7-3,2 0	300 600 240 -	1,6-2,4 4,3-4,6 8,2 -

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 115,0-117,0	1245-1255*	LDA 600	0,7 bar 113,5-116,5	100	190,0-240,0		
			LDA 500	0 bar 81,0- 85,0	225	9,0- 13,0 dispersion max.1,5)**		
(increase by 2,0 cm³)					1220	36,5 -46,5 dispersion max.4)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D3

D3

The numbers denote the sequence of the tests

SCA 8,0 c

B. Governor Settings

EP/RSV ... P1/310

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	 5	 6	④ Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	③ Torque control rev/min 10	Control rod travel mm 11
ca.71	1200 1250 1300	16,0 11,9 6,3	— without auxiliary spring			ca.31	350	6,0		
							100 350 400 520	19 - 21 5,7-6,3 3,3-4,5 0 - 1		
②a	1250 1320 1420	10,8-12,4 2,4- 6,0 0 - 1	with auxiliary spring							

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	⑥ Rotational-speed limitat. Note: changed to ...) rev/min 3	③a Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle ⑤ rev/min 6	cm³/1000 strokes 7	④a Idle stop rev/min 8	Control rod travel mm 9
1200	115,0-117,0	1230-1240*	600	113,5-116,5	100	190,0-240,0		
					350	9 - 13		
					1300	dispersion max.1,5)** :6 mmRW dispersion max.4)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
3012 - 275	0,40 - 0,42		- 0,1
		0,20 - 0,24	- 1,1

Notes:

(1) when n = 600 rev/min and gauge pressure = 0,7 bar (= maximum full-load control rod travel)

En

D4

D4

Test Specifications Fuel Injection Pumps ① and Governors

'40

WPP 001/4
3. Edition

En

PE 6 P 120 A 320 RS348 RQV 250-1200 PA321R
EP/RSV 300-1200 P2/408R

supersedes_
company: Berliet
engine: MIDS 062 030

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,3 +0,1	17,6 - 18,0	0,4(0,8)			
250	4,7-4,9	1,1 - 2,0	0,4(0,7)			
500/300	- -	C, 4-5 -	0,6(1,0			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
ca.68	1200 1480	15,2-17,8 0 - 1				ca.15	100 250 495-555 800	min.7,3 4,7-4,9 = 2,0 0 - 1	250	0,4-1,5
ca.65	11,3 4,0	1240-1250 1320-1350				③a			600 1130	2,9-3,6 8,3
									-	- - -

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed rev/min ④a 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1200	0,45 bar 176,0-180,0 (173,0-183,0)	1240-1250*	LDA 500	0,45 bar 91,0-97,0 (88,0-100,0)	100	110,0-130,0		
			LDA 350	0 bar 54,0-58,0 (51,0-61,0)	250	11,5- 19,5		
					100-170 (80-190)			

./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

9,78

D5

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
ca.50	1150	16,0	without auxiliary spring	ca.21	300	4,8		
	1250	10,8			150	19 - 21		
	1340	4,8			300	4,5-5,1		
(2a)	1250	10,4-11,2	with auxiliary spring		450	2,0-3,4		
	1350	3,6- 5,1			640	0 - 1		
	1500	0,3- 1,0						

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
See page 1		1240-1250*						

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing ~~increasing~~ pressure – in bar gauge pressure

Pump/governor	Setting: Gauge pressure = bar	Measurement: Gauge pressure = bar	Control rod travel-diminution difference mm (1)
348 - 321 R	0,41		12,3 - 12,4
348 - 408 R)		0,20	11,8 - 11,9
		0,17	11,3 - 11,5
		0	11,0 - 11,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

D6

26

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4
1. Edition
En

PE 6 P 100 A 720 RS 414 RSV250-1175 P1/473

supersedes -
company FBW
engine C u 6 A

1 - 5 - 3 - 6 - 2 - 4
0 - 60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW 10,5

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1175	12,4	12,6-13,0	0,5(0,8)			
	+0,1					
250	8,3-8,5		0,8(1,2)			
600	- - - -	c, Sp 4-5	0,7(1,0)			
600	- - - -	c, Sp.4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.22	250	8,4		
							250	8,8-9,0		
ca.61	1215-1225 =11,4						495-555	=2,0		
(2a)	1290-1320 = 4,0									
	1450= 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1175	0,7 bar 126,0-130,0 (123,0-133,0)		LDA 600	0,7 bar 119,0-123,0 (116,0-126,0)	100	150,0-170,0	250	8,9

Checking values in brackets

* 1 mm less control rod travel than col 2

11.80

Testoil-ISO 4113

D13

D13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
414 - 473	0,7 bar		12,5 - 12,6
		0,35	12,4 - 12,5
		0,25	12,0 - 12,1
		0	11,6 - 11,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 PEN 7,0 d
1. Edition
En

PE 6 P 110 A 320 RS 374 RSV 200-1200 P 1/305R (1)
200-1000

supersedes –
company Volvo-Penta
engine TMD 70 C (1)
MD 70 G (2)

Setting values for the governor

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,5	9,1 - 9,3	0,4(0,8)	10,5	9,3 - 9,5	n = 1000
200	+0,1 8,6-8,7	1,7 - 2,7	0,4(0,7)	+0,1 8,6-8,7	1,7 - 2,7	2,5±0,1** (max.2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ▭

Testoil-ISO 4113

B. Governor Settings

200-1200 (1)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca.26	200	8,1		
	x =	5,2			100	min.20		
ca.68	9,5	1240-1250			200	8,6-8,7		
	4,0	1295-1325			390-460	=2,0		
(2a)	1400	0,3- 1,7			550	0-1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1200	91,0 - 93,0 (88,0 - 96,0)	1240-1250*			200	19,0-29,0		
					1310	4,0-4,1mm	RW	
					dispersion max.4 (9)			

Checking values in brackets

* 1 mm less control rod travel than col 2

5.79

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D17

317

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 x	0,3-1,0 = 4,3				ca.22	200	8,1		
							100	min.20		
							200	8,6-8,7		
ca.53	9,5	1040-1050					390-450	= 2,0		
(2a)	4,0	1095-1125					550	0 - 1		
	1200	0,3-1,7								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat. Note: changed to ...)	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1000	93,0-95,0 (90,0-98,0)	1040-1050*			200	19,0-29,0		
					1110	4,0-4,1 mm dispersion max.4	RW (9)	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat. Note: changed to ...)	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

D18

DAF

En

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4
1. Edition

En

PES 6 P 110 A 720 RS337 EP/RSV 400-1050 P 0/416DR

supersedes -
company John Deere
engine 6619 T

dimension H = 28,0 mm

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,2	13,5 - 13,7	0,4			
400	6	2,1 - 2,7	0,4			

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.39	1050 1100 1150	15,6-16,2 8,4-10,8 3,6- 5,6	without auxiliary spring	ca.20	400	6,8	1050 750 630	0 0 0,5
(2a)	1200 1250	0,3- 2,9 0,3- 1,5	with auxiliary spring		100 400 520-580	19 - 21 6,8 2		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2 ±2	(6) Rotational-speed limitat, Note. changed to .) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1050 630 550	1,0 bar 135-137 145-149 114-122	1095-1105 (1090-1110)	1150	45 - 55	100	min 190	400	21,0-27 cm³/1000 Strokes ./.

Checking values in brackets

* 1 mm less control rod travel than col 2

3,78

EA

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing (XXXXXXX) pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
Manifold-pressure compensator setting	0,68-0,72	0,16-0,24	
Switching point	max. 0,76	min. 0,48	

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

unlocking n=350-450/min

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCA 11,0 k 2
1. Edition

En

PE 6 P 90/720 RS 147, 206 EP/MZ 80 P 3 R
RS 149, 205 EP/MZ 80 P 4 R
Port-closing test with/without ROBO diaphragm

supersedes ~~SCA 11,0 k (7,71)~~
company Scania
engine D 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1 mm (from BDC) $(^{+0,15}_{-0,05})$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
1000	12	8,5 - 9,2	0,4			2,5±0,1* (max.2,2-2,9)
600	9	2,9 - 3,9				
	12	7,4 - 8,4				
	15	12,2 -13,5				
200	9	1,8 - 2,8				

Adjust the fuel delivery from each outlet according to the values in [illegible]
In the case of greater dispersion alter the delivery-valve spring pre-tension

Testoil-ISO 4113

B. Governor Settings

EP/MZ .. 3R, 4R

Torque control travel mm 1	Leakage Vacuum pressure drop mm water col. 2	Leakage Time at least s 3	Control-rod travel limitation breakaway* Vacuum mmw.c. 4	Control-rod travel limitation breakaway* Control rod travel mm 5	Control rod travel test Vacuum mmw.c. 6	Control rod travel test Control rod travel mm 7	Auxiliary spring auxiliary cam** Vacuum mmw.c. 8	Auxiliary spring auxiliary cam** Control rod travel mm 9	Torque control Vacuum mmw.c. 10	Torque control Control rod travel mm 11
-	2000-1700	10	-	-	335	13,5-14,5	415	4,1-6,3	-	-
					370	7,8-11,4				
					400	4,4-6,6				
					440	3,7-6,0				
					480	3,0-5,3				

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 – C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F) rev/min 1	Vacuum mm wat col 2	cm³/1000 strokes 3	Fuel delivery characteristics rev/min 4	Vacuum mm wat col 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance) rev/min 7	Vacuum mm wat col	Control road travel from full-load to idle mm cm³/1000 strokes 8
1080	0	142,0-144,0 (140,0-146,0)	600	0	135,0-139,0 (133,0-141,0)	start		
						100		190-240
						225		9-11
						dispersion max.		1,5
						1200		16-22
						dispersion max.		4

Checking values in brackets

E3

E3

Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 100 A 320 RS 384 Z RQ 250/1100 PA 574

supersedes –
company: DAF
engine: DKL 1160

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3 mm (from BDC) RW 9 mm FB Diff. 9 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11,5	10,9 - 11,2	0,5			
1050	+0,1 10,8-11,1	10,6 - 11,1				
225	7,2-7,4	1,0 - 1,4	0,3			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	10,8	1140-1155	225	7,3	100	min.7,5		
				4,0	1175-1205			225	7,2-7,4		
1400	0 - 1							325-600	365=2,0 0 - 1		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/–1000 strokes 2	rev/min 3	rev/min 4	cm³/–1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1050	106,5-111,5 (104,0-114,0)		600	109,5-112,5 (108,0-113,0)	100	21,5 19,5-21,0 RW
					225	7,2

Checking values in brackets

11.80

E8

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 11,6 s 2
1, Edition

En

PE 6 P 100 A 320 RS 384 y RQ 300/1100 PA 574

supersedes -
company: DAF
engine: DKL 1160

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3 mm (from BDC) RW 9 mm FB.Diff 9 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11,5	10,9-11,2	0,5			
	+0,1					
1050	10,8-11,1	10,6-11,1				
225	7,2-7,4	1,0- 1,4	0,3			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	10,9	1140-1155	225	7,3	100	min.7,5		
								225	7,2-7,4		
1400	0 - 1			4,0	1175-1205			325-365	=2,0		
								600	0 - 1		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1050	106,5-111,5 (104,0-114,0)		600	109,5 - 112,5 (108,0 - 114,0)	100	21,5 19,5-21,0 RW
					225	7,2

Checking values in brackets

11.80

Test Specifications Fuel Injection Pumps and Governors (1A)

VDT-WPP 001/4
2. Edition

En

PES 6 P 100 A 720 RS 1010 EP/RSV 400-1050 P2/411D
P2/412D
P7/413D

supersedes -
company John Deere
engine 6531

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4 + 0,1 mm (from BDC) $^{+0,15}_{(-0,05)}$

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,7 - 13,4	0,5			
600	9	5,6 - 6,8				
	12	11,6 - 13,2				
	15	17,2 - 19,0				
200	9	4,0 - 5,2				

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

EP/RSV .. P2/411D

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.38	1040	16,0	without auxiliary spring	ca.17	400	7,2	1050	0
	1080	11,5			200	19 - 21	800	0,6-0,8
	1220	4,6			400	6,9-7,5		
					550	3,2-5,1		
(2a)	1050	ca.11,0	with auxiliary spring		780	0 - 1	500	0,8-1,0
	1155	ca. 4,7						
	1280	0,3-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,9 bar		LDA	0,9 bar				
1050	142,0-144,0	1085-1095*	750	156,0-160,0	400	21,0-27,0		
	(140,0-146,0)			(154,0-162,0)		(19,0-29,0)		
			LDA	0 bar	1155	24,0-44,0		
			500	108,0-116,0		(22,0-46,0)		
				(106,0-118,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

1.77

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E10

E10

The numbers denote the sequence of the tests

B. Governor Settings

EP/RSV ..P2/412D

① Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	④ Control-lever deflection in degrees (7)	Lower rated speed rev/min (8)	Lower rated speed: Control rod travel mm (9)	③ Torque control rev/min (10)	③ Torque control: Control rod travel mm (11)
ca.38	1040 1080 1120	16,0 11,2 5,2	without auxiliary spring	ca.17	400	7,2		
					200 400 550 780	19 - 21 6,9-7,5 3,3-5,1 0 - 1	1050 800 500	0 0,6-0,8 0,8-1,0
②a	1050 1100 1280	ca.10,6 ca. 4,7 0,3-1,0	with auxiliary spring					

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	⑥ Rotational-speed limitat. Note: changed to ...) rev/min (3)	③a Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle ⑤: rev/min (6)	cm³/1000 strokes (7)	④a Idle stop: rev/min (8)	Control rod travel mm (9)
LDA	1,0 bar		LDA	1,0 bar				
1050	151,0-153,0	1085-1095*	750	163,0-167,0 (161.0-169,0)	400	21,0-27,0		
			LDA	0 bar	1155	24,0-44,0 (22,0-46,0)		
			500	108,0-116,0 (106,0-118,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

EP/RSV .. P7/413D

① Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	④ Control-lever deflection in degrees (7)	Lower rated speed rev/min (8)	Lower rated speed: Control rod travel mm (9)	③ Torque control rev/min (10)	③ Torque control: Control rod travel mm (11)
ca.66	1040 1080 1110	16,0 9,0 3,2	without auxiliary spring	ca.28	400	7,0		
					150 400 500 660	19 - 21 6,7-7,3 3,2-5,9 0 - 1	1040 500	0 0,7-0,9
②a	1050 1110 1220	ca.13,2 ca. 5,2 0,3-1,0	with auxiliary spring					

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	⑥ Rotational-speed limitat. Note: changed to ...) ~~rev/min~~ (3)	③a Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle ⑤: rev/min (6)	cm³/1000 strokes (7)	④a Idle stop: rev/min (8)	Control rod travel mm (9)
1050	151,0-153,0	1065-1075*	750	163,0-167,0	400	21,0-27,0		
					1115	4,5-5,5mm	RW	

Checking values in brackets

* 1 mm less control rod travel than col. 2

E11

EAA

En

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
1010 + 411D	0,55	0,20	0,1 - 0,3 mm 1,8 - 2,0 mm
1010 + 412D	0,63	0,20	0,1 - 0,3 mm 2,2 - 2,4 mm
hydraulic 1010 + 411D 1010 + 412D	Locking at max. 0,76 max. 0,76	Unlocking at min. 0,45 min. 0,48	

Notes:
(1) when n = 750 rev/min and gauge pressure = 1,0 bar (= maximum full-load control rod travel)

Preliminary adjustment, dimension H - 411D = 32,8 mm
- 412D = 33,3 mm

Test Specifications Fuel Injection Pumps ① and Governors

Wpp 001/4 VOL 7,0 e
5. Edition

En

PE 6 P 110 A 320 RS 367 RQV 250-1200 PA394/2R (1)
RS 367Z PA394/2R (2)
RS 367Y PA394/2R (3)

supersedes 4.79
company: Volvo
engine: TD 70 F
(1-174kW-237PS)
(2-155kW-210PS)
(3-180kW-245PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9	12,1 - 12,3	0,4(0,8)	10,9	10,0 - 10,2	2,5± 0,1** (max.2,2-2,9)
	+ 0,1			+0,1		
250	4,7-4,8	0,9 - 1,3	0,4(0,6)	4,7-4,8	0,9 - 1,3	
700	- - -	C, 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [redacted].

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

(1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1: rev/min 10	mm 11
ca.68	1200 1500	15,2-17,8 0 - 1				ca.12	100 250 420-470 600	min.6,3 4,7-4,9 =2,0 0-1	200 1230	0,3-1,2 8,2
ca.68	10,9 4,0	1260-1270 1370-1400				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed 2b 4a: rev/min 3	Fuel delivery characteristics high idle speed 5a 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point 6: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9
(1) 700	LDA 0,7 bar 121,0-123,0 (118,0-126,0)	1260-1270*	LDA 700	0 bar 78,5-80,5 (75,5-83,5)	100 250	165 - 200 11-15 dispersion max.3)**		

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.80

E13

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1200 1450	15,2-17,8 0 - 1		-	-	-	ca.12	100 250	min.6,5 4,7-4,8	200 1230	0,3-1,2 8,2
ca.67	9,9 4,0	1265-1275 1360-1385					(3a)	600	0-1		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
700	LDA 0,6 bar 100,0-102,0 (97,0-105,0)	1265-1275*	LDA 700	0 bar 78,5-80,5 (75,5-83,5)	100 250 dispersion max.3	165-200 11- 15	)**	

Check alues in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4112

B. Governor Settings

367Y (3)

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1200 1450	15,2-17,8 0 - 1					ca.12	100 250	min.6,3 4,7-4,8		
ca.68	11,3 4,0	1240-1250 1322-1390					(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,7 129,0-131,0 (126,0-134,0)	1240-1250*	LDA 700	0 bar 78,5-80,5 (75,5-83,5)	100 250 dispersion max.3	165,0-200,0 11-15**		

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
367 - 394/2R	0,48	0,27	11,5 - 11,6 10,3 - 10,5
367 - 394/2R	0,37	0,24	10,6 - 10,7 9,9 - 10,1
367 - 394/2R	0,53	0,26	11,8 - 11,9 10,3 - 10,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PE6P110A720RS 368
RS 380

RQV 250-1050 PA 240 R (1)
250-1100 PA 434 R (2)
250-1100 PA 503

supersedes 6.79
company: Chrysler
engine: BSS36

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	14,5-14,5	16,6-16,8	0,4(0,8)	15,5-15,6	18,6-18,8	n = 1100
250	8,7-8,9	2,2- 2,8	0,4(0,7)	8,5-8,7	2,2- 2,8	
1050/1100	-	C, 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

240 R (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1050 1400	15,2-17,8 0 - 1	-	-	-	ca.13	100 250 490-555	min.10,3 8,7-8,9 = 2,0	250 500 1080	1,1 4,0-4,2 7,6
ca.62	13,5 4,0	1090-1100 1230-1260				350-500 (3a)	700	0 - 1		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1050	0,7 bar 166,0-168,0 (163,0-171,0)	1090-1100*	LDA 1050	0 bar 127,0-131,0 (124,0-134,0)	100	19,5-21,0		

./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

E19

E19

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1180 1400	15,2-17,8 0 - 1		-	-	-	ca.18	100 250 470-530 750	min.10,1 8,5-8,7 = 2,0 0 - 1	250 800 1140	1,6-1,8 5,4-5,6 8,2
ca.65	14,5 4,0	1140-1150 1290-1320					(3a)	340-460			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1100	0,9 bar 186,0-188,0 (183,0-191,0)	1140-1150*	LDA 1100	0 bar 134,0-138,0 (131,0-141,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing (XXXXXXX) pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm
368 - 240 R	0,68	0,50 0,36 0	14,5 - 14,6 14,0 - 14,1 12,9 - 13,2 12,6 - 12,7
380 - 434 R	0,90	0,68 0,48 0	15,5 - 15,6 15,0 - 15,1 13,7 - 13,9 13,2 - 13,3

En

1.80

E20

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1180 1400	15,2-17,8 0 - 1		-	-	-	ca.18	100 250	min.10, 8,5-8,7		
ca.65	14,5 4,0	1140-1150 1280-1320					(3a)	500-560 340-460	=2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1100	0,9 bar 186,0-188,0 (183,0-191,0)	1140-1150	LDA 1100	0 bar 134,0-138,0 (131,0-141,0)	100	(80)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure bar	mm
380 - 503	0,90		15,5 - 15,6
		0,68	15,0 - 15,1
		0,475	13,5 - 13,7
		0	12,9 - 13,0

PE 6 P 110 A 720 RS 3005 RQV 250-1100 PA 183 R
RS 3007 RQV 250-1100 PA 229R
RS 3005 EP/RSV 350-1100 P1/310 R

supersedes 11.74
company: Scania
engine: D 11

Z..1 See page 3!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 + 0,1 mm (from BDC) +0,15 -0,05

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,4 - 13,0				2,5±0,1** (max.2,2-2,9)
600	9	5,8 - 6,8				
	12	11,9 - 13,2				
	15	17,1 - 18,6				
200	9	3,4 - 4,3				

Adjust the fuel delivery from each outlet according to the values in ☐.

** In the case of greater dispersion alter the delivery-valve spring pre-t sion according to

B. Governor Settings

RQV ... 183

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1: rev/min 10	mm 11
ca.66	1120	15,0-17,6	-	-	-	ca.10	150	6,5-8,0	1200	8,3
	1200	9,2-13,6					250	3,6-6,1		
	1300	1,0- 7,6					400	1,1-2,4		
	1410	0				3a	500	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed 2b 4a: rev/min 3	Fuel delivery characteristics high idle speed 5a 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point 6: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9
1100	135,0-137,0	1135-1145*	600	132,0-136,0	100	190 - 240		
			1200	43,0- 53,0	225	12 - 16)**		
			dispersion max.4			dispersion max.2		
	(increase by 2,0 cm³)							./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

F1

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.66	1120 1200 1300 1410	15,0-17,6 9,2-13,6 1,0- 7,6 0		-	-	-		ca.10 (3a)	150 250 400 500	6,5-8,0 3,6-6,1 1,1-2,4 0		1120	8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	135,0-137,0	1135-1145*	600	132,0-136,0	100	190 - 240		
			1200	43,0- 53,0 dispersion max.4	225	8 - 12 dispersion max.2 **		

ing values in brackets

* 1 mm less control rod travel than col. 2

Testoil-I - .113

B. Governor Settings

EP/RSV 350-1100 P1/310 - 3005

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.67	1100 1150 1200	16,0 11,7 6,0		without auxiliary spring				ca.31 (3a)	350	6,0		1080	0
	1150 1200 1350	10,4-12,5 4,4- 7,8 0,3- 1,0		with auxiliary spring					100 350 400 500	19 - 21 5,7-6,3 3,2-4,7 0 - 1			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	135,0-137,0	1135-1145*	600	132,0-136,0	100	190 - 240		
					350	8 - 12 dispersion max. 2 **		
					1200	38,0-48,0		

./.

Checking values in brackets

* 1 mm less control rod travel than col 2

SCA 11,0 n

Output variation Index	%	n = U/min	Q = cm²/1000	n = U/min	Q = cm³/1000	Adjustment of control-rod position from 100% setting mm
T	103	1100	138 ± 1,0	600	136 ± 2,0	+ 0,2
X	95	1100	126	600	124	- 0,5
Q	93	1100	122	600	120	- 0,7
Z	90	1100	117	600	113	- 1,0
O	88	1100	114	600	108	- 1,2
N	85	1100	111	600	104	- 1,4
M	80	1100	106	600	96	- 1,7
L	75	1100	99	600	86	- 2,1
K	70	1100	94	600	76	- 2,5
J	65	1100	89	600	68	- 2,8
I	60	1100	83	600	59	- 3,3

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FBW 11,9 b
1. Edition
En

PE 6 P 120 A 721 RS 439 RQV 250-1025 PA 608

supersedes –
company: FBW
engine: E 5 A/EU 5 A
206 kW (280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	19,6 - 20,0	0,5(0,8)			
250	7,4-7,5	3,5 - 4,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1060	15,2-17,8	-	-	-	ca.13 (3a)	100	min.8,5	200	0,7-0,9
							250	7,4-7,5	475	2,6-2,9
ca.46	9,8	1065-1075							750	4,6-4,8
	4,0	1110-1140					410-460= 2,0mm		1075	8,0
	1240	0 - 1,0								

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 196,0-200,0 (193,0-203,0)	1065-1075*	LDA 600	0,7 bar 174,0-180,0 (172,0-182,0)	100	150,0-170,0	1000	10,8+0,1
							500	11,4+0,3
							900	10,8+0,3
			LDA 600	0 bar 126,0-130,0 (123,0-133,0)			700	11,2+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.81

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

G1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

FBW 11,9 b

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..RS 439 - ..PA 608	0,7	0 0,5 0,4	11,5 - 11,6 9,4 - 9,5 10,9 - 11,1 10,2 - 10,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 VOL 12,0 h
2. Edition

En

PE 6 P 120 A 320 RS 3074 RQV 250-1100 PA 564

supersedes 6.81
company: Volvo
engine: TD 120 F
283 kW(385 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,6+0,1	24,1-24,4	0,5(0,9)			2,5 ± 0,1 (max.2,5-2,9) **
250	4,3-4,5	2,3- 2,7	0,5(0,8)			

Adjust the fuel delivery from each outlet according to the values in [redacted]

** In the case of greater dispersion after the delivery-valve spring pre-tensio accordingly.

Testc... 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.11	100	min.6,0	200	1,1-1,4
ca.62	12,6	1140-1150					250	4,3-4,5	500	3,3-3,5
	4,0	1235-1265				260-355			800	5,1-5,3
	1350	0 - 1,0							100	8,1
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery/ idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	1,2 bar 241,0-244,0 (238,0-247,0)	1140-1150*	LDA	0 bar 148,0-152,0 (145,0-155,0)	100	288,0-308,0 / 16,5-17,5 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.81

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure VOL 12,0 h

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 3074 - ..PA 564	1,2	0 0,67 0,23	13,6 - 13,7 9,8 - 9,9 12,5 - 12,7 10,7 - 10,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4
4. Edition
En

PE 6P 110 A 720 RS 368 RQV 250-1050 PA 240R

1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes 1.80
company: Chrysler
engine: BS 36
202kW (275PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) 2,80-2,90 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	14,5-14,6	16,6-16,8	0,4(0,8)			
250	8,7-8,9	2,2- 2,8	0,4(0,7)			
1050	-	C,Sp. 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1050	15,2-17,8	-	-	-	ca.13	100	min.10,3	250	1,1
	1400	0-1					250	8,7-8,9	600	4,0-4,2
ca.62	13,5	1090-1100					495-555 = 2,0		1080	7,6
	4,0	1230-1260				350-500 (3a)	700	0 - 1		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0 bar				
1050	166,0-168,0 (163,0-171,0)	1090-1100*	1050	127,0-131,0 (124,0-134,0)	100	19,5-21,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.80

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
368 - 240R	0,68		14,5 - 14,6
		0,50	14,0 - 14,1
		0,36	12,9 - 13,2
		0	12,6 - 12,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 MB 11,8 1

3. Edition

En

PE 6 P 110 A 720 RS 371 RQV 300-1100 PA 455 R

1 - 5 - 3 - 6 - 2 - 4

0 -60-120-180-240-300° ± 0,5 (±0,75°)

supersedes 8.81

company: Daimler-Benz

engine: OM 355 A
206 kW(280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) 2,80-2,90 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7 +0,1	16,0-16,2	0,4(0,8)			
300	5,9-6,1	1,1 - 1,7	0,4(0,7)			
600	11,7+0,1	C,Sp. 4 - 5	0,6(1,0)			
500	11,0+0,1	C,Sp. 4 - 5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8				ca.17	100	min.7,7	250	0,9-2,0
							300	6,1-6,3	550	4,1-4,5
ca.66	10,7	1140-1150					430-500	=2,0		5,5-5,9
	4,0	1225-1255								8,2
	1350	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 160,0-162,0 (157,0-165,0)	1140-1150*	LDA 600	0,7 bar 155,0-159,0 (152,0-162,0)	100	140,0-160,0		
			LDA 500	0 bar 132,0-136,0 (131,0-139,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.82

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H1

HA

D. Adjustment Test for Manifold Pressure Compensator

MB 11,8 1

Test at n = 500 rev/min decreasing ~~increasing~~ pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
371 - 455 R	0,7 bar		11,7 - 11,8
		0,39	11,5 - 11,6
		0,35	11,2 - 11,3
		0	11,0 - 11,1

Notes:
(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

H2

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 RVI 8,8 e
1. Edition

En

PES 6 P 120 A 320 RS 406 RQV 250-1100 PA 495

supersedes -
company: RVI
engine: MIDS 062030
188 kW (256 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,9+0,1	19,0-19,4	0,5(0,8)			
250	4,0-4,2	1,7- 2,3	0,8(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100 1350	15,2-17,8 0 - 1,0				ca.10 (3a)	100 250	min.5,6 4,0-4,2	200 500 800 100	0,7-1,0 3,4-3,6 4,8-4,9 6,8
ca.66	8,9 4,0	1140-1150 1180-1210								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4b) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 190,0-194,0 (187,0-197,0)	1140-1150*	LDA	0 bar 141,0-145,0 (138,0-148,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

H9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing (XXXXXXXX) pressure – in bar gauge pressure

RVI 8,8e

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
..RS 406 -	0,7		9,9 - 10,0
--PA 495		0,33	9,4 - 9,5
		0,27	8,3 - 8,4
		0	8,0 - 8,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 e
1. Edition
En

PE 6 P 120 A 320 RS3048 RQV 250-1100 PA414/2R (1)
PE 6 P 120 A 320 RS3046 EP/RSV 200-900 P 4/421R (2)

supersedes -
company: Volvo
engine: T(M)D 120 C

Testing with T nozzles and fuel lines 8x2x1000

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,60-2,70 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,3 +0,1	21,8-22,1	0,4(0,8)	12,7 +0,1	21,7 - 21,9	2,5 ± 0,1** (max.2,2-2,9)
250	5,8-5,9	1,6 - 2,0	0,4(0,7)	5,8-5,9	0,9 - 1,3	0,3(0,6)
700	- - -	C, 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ].

In the case of greater dispersion alter the delivery-valve spring pre-tensic accordingly.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca.50	1100 1350	15,2-17,8 0 - 1	-	-	-	ca.12	100 250	min.8,5 5,8-5,9	250 800	0,5-1,2 4,6-5,0
ca.48	11,3 4,0	1140-1150 1235-1265				(3a)		330-390 = 2,0	1170	8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
(1) 700	LDA 1,1 bar 218,5-220,5 (215,5-223,5)	1140-1150*	LDA 700	0 bar 148,0-152,0 (145,0-155,0	100 250	205,0-245,0 16-20** dispersion.max.4(7)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

./.

7.78

BOSCH
Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 0,3-1,7 x = 5,0					ca.23	250	5,3	900	0
ca.55	940-960 =11,7 995-1025= 4,0						100 250 315- 450	min.19 5,8-5,9 375=2,0 0 - 1	250	1,2-1,8
(2a)	1100 = 0,3-1,7									

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat.	(3s) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	Note: changed to ...) rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 700	217,0-219,0 (214,0-222,0)	940-950*			100 250	395,0-435,0 9 - 13** dispersion max.3(6)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
3048 - 414/2R	0,61		11,8 - 11,9
		0,20	9,6 - 9,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

H18

H18

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 10,0 g 1
1. Edition
En

PE 6 P 110 A 320 RS 229 RQV 250-1100 PA 236/2R

supersedes -
company: Volvo
engine: THD 100 D
154,5 kW(210PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9,7-9,8	12,1 - 12,3	0,4(0,8)			
250	5,2-5,4	0,9 - 1,3	0,3(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ①: rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.11	100	min.6,8	200	0,6-1,0
							250	5,2-5,4	500	2,9-3,2
ca.44	8,7	1140-1150							800	5,0-5,3
	4,0	1190-1220						305-365=2,0mm		
	1350	0 - 1,0							1100	7,7
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 700	0,4 bar 121,0-123,0 (118,0-126,0)	1140-1150*	LDA 700	0 bar 112,5-115,5 (109,5-118,5)	100	320,0-360,0 bei 19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.82

H21

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

VOL 10,0 g 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P.. RS 229 - ..PA236/2R	0,4	0 0,17	9,7 - 9,8 9,2 - 9,3 9,4 - 9,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 FIA 13,8 g
3. Edition

En

PE 8 P 120 A 920/5 LS 3804 RQV 300-1200 PA 506

1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je 45° ± 0,5° (± 0,75)

supersedes 2.81
company: Fiat
engine: 331 kW(450 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,6+0,1	24,3 - 24,7	0,5(0,9)			
300	4,9-5,1	1,9 - 2,5	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1280	15,2-17,8	-	-	-	ca.10	100	min.6,5	250	0,6-0,9
						310-405	300	4,9-5,1	560	3,8-4,3
ca.59	10,6	1240-1250							880	5,5-5,7
	4,0	1360-1390							1200	7,8
	1500	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 243,0-247,0 (240,0-250,0)	1240-1250*	LDA 1200	0 bar 160,0-164,0 (157,0-167,0)	100	210,0-240,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.82

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H23

H23

D. Adjustment Test for Manifold Pressure Compensator

FIA 13,8 g

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE8P..LS3804 - ..PA506	0,70		11,6 - 11,7
		0	8,5 - 8,6
		0,44	10,8 - 10,9
		0,35	9,2 - 9,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

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Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001(4 SCA 11,0 u 1

1. Edition

En

PE 6 P 120 A 720 RS 7001 RQV 250-1050 PA 539

supersedes -

company: Saab-Scania

engine: DS 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,00-5,10 (4,95-5,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,3+0,1	23,8 - 24,2	0,5(0,9)			
250	3,9-4,1	1,6 - 2,0	0,5(0,8)			

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1050 1350	15,2-17,8 0 - 1,0	-	-	-	ca.9	250	4,0	200 500 800 1050	1,0-1,2 3,8-4,3 5,6-5,8 7,6-7,7
ca.59	11,3 4,0	1090-1100 1210-1240				(3a)	100 250 350-370	min.6,1 3,9-4,1 = 2,0mm		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 238,0-242,0 (235,0-245,0)	1090-1100*	LDA 600 LDA 500	0,7 bar 199,0-205,0 (196,0-208,0) 0 bar 161,0-165,0 (158,0-168,0)	100	23,0-28,0 bei 20,0-21,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.81

BOSCH

Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

J1

J1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/mn ~~decreasing~~ increasing pressure – in bar gauge pressure SCA 11,0 u 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
..RS 7001 -	0,7 bar		12,3 - 12,4
..PA 539		0,45	12,0 - 12,1
		0,37	11,6 - 11,8
		0	11,4 - 11,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 120 A 420 RS 3049 RQV 250-1000 PA 505

supersedes -

company: Sauer

engine: D4KT

1 - 4 - 2 - 6 - 3 - 5 je 60°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) 3,20-3,30 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,3-11,4	24,5 - 24,9	0,5(0,8)			
250	5,3-5,5	2,8 - 3,6	0,8(1,2)			
700/400	- - -	C, Sp. 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve trave. (1) rev/min 10	mm 11
ca.68	1000 1250	15,2-17,8 0 - 1	-	-	-	ca.14	100 250	min.7,0 5,3-5,5	250 350 1050	1,3 2,6-2,8 8,6
ca.68	10,3 4,0	1040-1050 1110-1140				(3a)	430-480= 2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm +0,1 9
LDA 1000	1,2 bar 245,0-249,0 (242,0-252,0)	1040-1050*	LDA 700	1,2 bar 216,0-220,0 (213,0-223,0)	100	225,0-235,0	1000 900 700	11,3 11,5 11,5
			LDA 400	0 bar 94,0- 98,0 (91,0-101,0)	100-170 (80-190)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.80

J3

J3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure XXXXXXXXX

SAU 12,0 c

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
3049 - 505	1,2 bar		11,5 - 11,6
		0,65	11,0 - 11,1
		0,32	8,2 - 8,6
		0	7,9 - 8,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4
1. Edition

En

PES 6 P 110 A 720/3 RS3036 RQV 300/600-900 PA453 K

supersedes -
company: Mack
engine: ETA 676 E

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at prestroke 2,40-2,50 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,4	18,8-19,0				
300	5,5	1,1- 2,0				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.66	970 1200	16,2-17,8 0 - 1	-	-	-	ca.18 (3a)	100 300 400 570-630	min.10 7,9-8,1 3,8-5,2 =2,0	300 600 960	1,2-2,4 4,5-5,0 8,3
ca.54	13,4 4,0	940 - 950 1100-1130								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 900	1,6 bar 187,5-189,5	940-950*	LDA 600 PLE 300 =	1,6 bar 227,0-231,0 79-99 0.740-0.820	100 300	110,0-170 13 - 22		

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.

J11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
3036 - 453K	0,46 - 0,52	1,33	---

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 SCA 11,0e1
1. Edition
En

PE 6 P 100/720 RS73 EP/RSV 350-1100 P 1/310R
PE 6 P 90/720 RS75 EP/RSV 350-1100 P 1/310R

supersedes 11,0 e v. 5,71
company Scania
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery S73 cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery S75 cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,6 - 14,2	0,6 0,4	12	8,5 - 9,2	S73:3,5±0,1** (max.3,2-3,9)
600	9	6,3 - 7,3		9	2,9 - 4,2	
	12	12,3 - 13,5		12	7,4 - 8,4	S75:2,5±0,1** (max.2,2-2,9)
200	9	4,1 - 5,2		9	1,8 - 2,8	

Adjust the fuel delivery from each outlet according to the values in [ ]
** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

Testoil-ISO 4113

B. Governor Settings

350-1100 - 73

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.67	1100	16,0	without auxiliary spring	ca.31	350	6,0	max.	
	1150	11,7						
	1200	6,0			100	19 - 21		
	1150	10,5-12,5	with auxiliary spring		350	5,7-6,3		
(2a)	1200	4,3- 7,8			420	2,0-4,0		
	1300	0,3- 1,0			520	0,3-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1080	144,5-147,5	1120	600	139,0-143,0	100	240-290	350	6,0
					350	13-17		
						dispersion max.1,5	**	

Checking values in brackets

* 1 mm less control rod travel than col 2

4.78

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.67	1100 1150 1200	16,0 11,7 6,0	without auxiliary spring			ca.31	350	6,0	max.	
	1150 1200 1300	10,5-12,5 4,3- 7,8 0,3- 1,0	with auxiliary spring				100 350 420 520	19 - 21 5,7-6,3 2,0-4,0 0,3-1,0		
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1080	124,5-126,5	1120	600	113,0-117,0	100	210-260	350	6,0
					350	9 - 13 dispersion max.1,5	**	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 11,8 b 1

1. Edition

En

PE 6 P 110/720 RS176 EP/RSV 300-1100 P 1/303R (1)
350-750 P 4/397R (2)

supersedes 11,8b-5,74
company Daimler-Benz
engine OM 355 (A)

(1) Schmidt rotary snow plough
(2)Generating sets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,3 - 12,3	0,4			
600	9	4,3 - 5,5				
	15	15,5 - 17,2				
200	9	2,6 - 3,6				

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

..303R (1)

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
ca.60	1100	16,0		ca.24	300	7,0		
	1150	11,0	without auxiliary spring				1080	0
	1200	4,0			100	19 - 21		
	1170	6,2-10,2			300	6,7-7,3	300	0,7-1,3
(2a)	1200	4,5- 8,6	with auxiliary spring		450	1,8-4,1		
	1350	0,3- 1,0			600	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to .) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
(1) 1100	134,5-136,5	1120			100	ca.170,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.78

J21

J21

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.44	750	16,0	without auxiliary spring			ca.23	350	6,0		**
	800	8,6					200	19 - 21		
	825	4,0					350	5,9-6,1		
ca.42	750	ca.11,0					400	0 - 1		
	765	ca. 3,8	with auxiliary spring							
(2a)	840	0,1-1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat. Note: changed to ...)	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 730	135,0-138,0	750-760*	780-	800:3,8mmRW				

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Set idle-speed auxiliary spring at 2 mm control-rod travel then turn back 1/2 turn.

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat. Note: changed to ...)	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

J22

J22

En

Test Specifications Fuel Injection Pumps and Governors

1A

40

WPP 001/4 SCA 11,0 e
3. Edition

En

PE 6 P 100/720 RS31 EP/RSV 350-1100 P 1/307R
PE 6 P 100/720 RS31Y RS31V EP/RSV 350-900 P 1/307R

supersedes 5.71
company Scania
engine DS 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6+0,1 -S31
2,4+0,1 -31Y,V mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,6 - 14,2	0,6			3,5±0,1** (max.3,2-3,9)
600	9	6,3 - 7,3				
	12	12,3 - 13,5				
200	9	4,1 - 5,2				

Testoil-ISO 4113

Adjust the fuel delivery for each output according to the values in the table.

** In the case of greater dispersion after the delivery-valve spring pre-tension accordingly.
350-1100 - 35

B. Governor Settings

1 Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	4 Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	3 Torque control: rev/min 10	Control rod travel mm 11
ca.67	1100	16,0	—	ca.31	350	6,0	1100	0
	1150	11,7	without auxiliary spring		100	19 - 21	500	0
	1200	6,0			350	5,7-6,3		
	1150	10,4-12,5			400	3,2-4,7	300	1,2-1,8
2a	1200	4,4- 7,8	with auxiliary spring		550	0 - 1		
	1350	0,3- 1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	6 Rotational-speed limitat, Note: changed to) rev/min 3	3a Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery / Idle 5: rev/min 6	cm³/1000 strokes 7	4a Idle stop: rev/min 8	Control rod travel mm 9
1080	144,5-147,5	1120	600	139,0-143,0	100	240-290	350	6,0
					350	13 - 17)** dispersion.max.1,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

4.78

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

J23

J23

B. Governor Settings

350-900 - 31y

(1) Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	(4) Lower rated speed: Control-lever deflection in degrees (7)	rev/min (8)	Control rod travel mm (9)	(3) Torque control: rev/min (10)	Control rod travel mm (11)
ca.52	900	16,0	without auxiliary spring	ca.28	350	6,0	880	0
	950	12,0			100	19 - 21		
	1000	7,0			350	5,7-6,3	500	0
	980	7,8-10,6	with auxiliary spring		400	3,0-4,5	380	1,2-1,8
(2a)	1000	4,2- 8,8			500	0 - 1		
	1150	0,3- 1						

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	(6) Rotational-speed limitat. Note: changed to ...) rev/min (3)	(3a) Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle (5): rev/min (6)	cm³/1000 strokes (7)	(4a) Idle stop: rev/min (8)	Control rod travel mm (9)
900	160,5-163,5	920			100	240 - 290	350	6,0
					350	13 - 17 dispersion .max.1,5)**		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

350-900 - 31V

(1) Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	(4) Lower rated speed: Control-lever deflection in degrees (7)	rev/min (8)	Control rod travel mm (9)	(3) Torque control: rev/min (10)	Control rod travel mm (11)
ca.52	900	16,0	without auxiliary spring	ca.28	350	6,0	880	0
	950	12,0			100	19 - 21		
	1000	7,0			350	5,7-6,3	500	0
	980	7,8-10,6	with auxiliary spring		400	3,0-4,5	380	1,2-1,8
(2a)	1000	4,2- 8,8			500	0 - 1		
	1150	0,3- 1						

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	(6) Rotational-speed limitat. Note: changed to ...) rev/min (3)	(3a) Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle (5): rev/min (6)	cm³/1000 strokes (7)	(4a) Idle stop: rev/min (8)	Control rod travel mm (9)
900	158,5-161,5	920			100	240-290	350	6,0
					350	13 - 17 dispersion.max.1,5)**		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 SCA 11,0 1
2. Edition

En

PE 6 P 100/720 RS146 EP/RSV 350-1100 P 1/310
RS146Y 350-1100
RS146Z 350- 900

supersedes 12.71
company Scania
engine DS 11 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1 mm (from BDC) Y = 2,4+0,1

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,6 - 12,1	0,5			2,5±0,1** (max.2,2-2,9)
600	9	8,7 - 4,9				
	12	9,5 - 10,9				
200	9	2,4 - 3,4				

Adjust the fuel deliver from each outlet according to the values in t

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

350-1100 - 146

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
ca.67	1100	16,0	without auxiliary spring	ca.31	350	6,0		
	1150	11,7			100	19 - 21	max.	
	1200	6,0			350	5,7-6,3		
	1150	10,4-12,5	with auxiliary spring		400	3,2-4,7		
(2a)	1200	4,4- 7,8			550	0 - 1		
	1350	0,3- 1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1100	159,0-161,0	1120	600	154,0-158,0	100	190-240	350	6,0
					225	10-12 dispersion max.1,5	**	
					1200	40-42 dispersion max. 4)		

Checking values in brackets

* 1 mm less control rod travel than col 2

4.78

K1

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.67	1100	16,0	without auxiliary spring			ca.31	350	6,0	max.	
	1150	11,7					100	19 - 21		
	1200	6,0					350	5,7-6,3		
	1150	10,4-12,5	with auxiliary spring				400	3,2-4,7		
(2a)	1200	4,4- 7,8					550	0 - 1		
	1350	0,3- 1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	168,0-170,0	1120	600	163,0-166,0	100	190-240	350	6,0
					225	10 - 12 *	**	
					dispersion.max.1,5			

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

350-900 - 146Z

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.62	900	16,0	without auxiliary spring			ca.27	350	6,0		
	950	11,8					100	19 - 21	880	0
	1000	5,5					350	5,7-6,3	450	0
	950	10,6-12,6	with auxiliary spring				400	1,2-3,7	370	1,2-1,8
(2a)	1000	3,4- 7,6					460	0 - 1		
	1080	0 - 1								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
900	155,0-157,0	920			100	190-240	350	6,0
					225	10- 12 *	**	
					dispersion.max.1,5			

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 SCA 14,0 d
1. Edition

En

PE 8 P 110 A920/4 LS 3038 EP/RSV 350-1100 P 1/371R
.. LS 3055 P 1/371R

supersedes -
company Scania (295kW - 101PS)
engine DS 14

1 - 2 - 7 - 3 - 4 - 5 - 6 - 8 ± 0,50
0 -45 -90 -135-180-225-270-315° (± 0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,30-3,40 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,4	16,3 - 16,5	0,4(0,8)	13,5	16,3 - 16,5	2,5±0,1**
350	+0,1 4,0-4,1	0,7 - 1,1	0,2(0,4)	+0,1 6,3-6,4	0,7 - 1,1	
600	- - -	C, 4-5	0,6(1,0)			

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in [ ]
** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

371 - 3038

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca.31	350	4,0	-	-
	x =	5,2			100	min.19		
ca.67	12,4	1140-1150			350	4,4-4,6		
(2a)	4,0	1200-1240			385-415	= 2,0		
	1270	0,3 -1,7			500	0 -		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	163,0-165,0 (160,0-168,0)	1140-1150*	600	164,0-168,0 (161,0-171,0)	100	190-240		
					350	4,0mm RW	)**	
					dispersion max.2(4)			./.

Checking values in brackets

* 1 mm less control rod travel than col 2

2.79

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

K3

K3

The numbers denote the sequence of the tests

B. Governor Settings

371 - 3055

(1) Upper rated speed rev/min: Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			(4) Lower rated speed: Control-lever deflection in degrees	rev/min	Control rod travel mm	(3) Torque control: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.31	350	5,8		
	x	= 5,2					100	min.19		
							350	6,3-6,4		
ca.67	12,5	1140-1150					525-585	= 2,0		
(2a)	4,0	1240-1275					650	0 - 1		
	1350	0,3- 1,7								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min	cm³/1000 strokes	(6) Rotational-speed limitat. Note: changed to ... rev/min	(3a) Fuel delivery characteristics: rev/min	cm³/1000 strokes	Starting fuel delivery Idle (5): rev/min	cm³/1000 strokes	(4a) Idle stop: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1000	163,0-165,0 (160,0-168,0)	1140-1150*	600	164,0-168,0 (161,0-171,0)	100	190-240		
					350	6,3-6,4mm dispersion.max. 2	RW (4)	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			(4) Lower rated speed: Control-lever deflection in degrees	rev/min	Control rod travel mm	(3) Torque control: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min	cm³/1000 strokes	(6) Rotational-speed limitat. Note: changed to ... rev/min	(3a) Fuel delivery characteristics: rev/min	cm³/1000 strokes	Starting fuel delivery Idle (5): rev/min	cm³/1000 strokes	(4a) Idle stop: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

K4

K4

En

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4
2. Edition
En

PES 6 P 120 A 420 RS 297. RQ 200/1100 PA 279D

supersedes 3.80
company: Saurer
engine: D 2 KUT
176 kW (240 PS)

Testing with T nozzles and fuel lines 8x2x1000
Markering for start of pump delivery + 17° camshaft BTDC

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 - 3,4 mm (from BDC) (+0,15 / -0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	25,1 - 25,8	1,0			
600	6	6,2 - 7,4				
	15	30,5 - 32,9				
200	6	1,8 - 2,8				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,7-16,3	550	16,0	1120	14,6-15,0	500	0	100	6,4-8,8	700	15,8-16,0
				1150	8,8-13,3			200	4,9-6,9	850	15,4-15,6
				1200	0 - 7,3			300	2,1-4,5	950	15,0-15,3
				1250	0			410	0		

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	0,7 bar		LDA	0,7 bar		
1100	206,0-208,0		700	171,0-173,0	150	18,5 - 20,5
LDA	0 bar					
1100	143,0-149,0					
(increase by 3,0 cm³)						

Checking values in brackets

4.82

K15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure 297 - 279 D

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
297 - 279 D	0,33 - 0,36	0,06 - 0,07	- 0,1 ca. - 1,8

Notes:

(1) when n = 1100 rev/min and gauge pressure = 0,7 bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors ②

VDT-WPP 001/4 BOS 12,3 f
2. Edition
En

PE 6 P 120 A 721 RS 217 RQ 250/1100 PA 131 DR (1)
RQ 250/1050 PA 289 DR (2)

supersedes -
company: Büssing
engine: S 12 DA 62
(1 - 320 PS)
(2 - 300 PS)

Testing with T nozzles and fuel lines 8x2x1000

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) +0,15 / -0,05

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	19,6 - 20,4	0,8			
600	9	9,6 - 11,0				
	15	21,3 - 23,2				
200	9	5,0 - 6,2				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

RQ .. 131 DR (1)

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
500	15,7-16,3	500	16,0	1120	14,7-15,0	490	0	160	6,6-8,1	620	15,8-16,0
				1150	9,0-13,4			150	4,3-6,3	820	15,0-15,2
				1200	0 - 6,7			350	0 -2,4		
				1250	0			390	0		

Torque-control travel on flyweight assembly dimension a = 0,3 mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
(1-	0,75 bar)		0,75	bar		
1100	241,0-243,0		700	202,0 - 206,0	100	ca. 16mm RW
	0 bar		500	199,0 - 205,0		
1100	212,0-216,0					
	(increase by 3,0 cm³)					

Checking values in brackets

10.75

K23

B Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
500	15,7-16,3	500	16,0	1070	14,3-14,8	520	0	150	6,6-8,0	750	15,7-16,0
				1100	6,5-12,5			250	4,5-6,5		
				1130	0 - 8,0			350	1,0-3,3	950	14,8-15,0
				1180	0			420	0		

Torque-control travel on flyweight assembly dimension a: 0,35 mm

Speed regulation At 1090-1105

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40° C (104 F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/- 1000 strokes	rev/min	rev/min	cm^3/- 1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
(2-	0,7 bar)		0,7	bar		
1050	224,5-227,5		700	193,5 - 198,5	100	ca. 16 mmRW
			0	bar		
			500	121,0 - 125,0		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min XXXXXXX decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
217 - 131 D	0,23 - 0,26	0,43 - 0,47	ca. 5,2 mm
217 - 289 D	0,20 - 0,24	0,49 - 0,52	ca. 2,5 mm

Notes

(1) when n = 1100 / 1050 rev/min and gauge pressure = 0,75 / 0,7 bar (= maximum full-load control rod travel)

En

Testoil-ISO 4113

K24

K24

Test Specifications Fuel Injection Pumps ① and Governors

En

PE 6 P 100 A 320 RS365 RQV 250-1100 PA 232/2R

supersedes -
company: Volvo
engine: TD 100 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,60-2,70 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0-13,1	14,5-14,8	0,4(0,6)			2,5+0,1** (max 2,2-2,9)
250	6,0-6,1	1,0 - 1,4	0,2(0,5)			
700	- - -	C 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.50	1100 1350	15,2-17,8 0 - 1	-	-	-	ca.12 (3a)	100 250	min.9,0 6,0-6,1	250 430	1,1-1,2 4,4-4,6
ca.45	12,0 4,0	1140-1150 1250-1290					350-380= 2,0		1140	8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,5 bar 145,0-148,0 (143,0-150,0)	1140-1150*	LDA 700	0 bar 115,0-118,0 (113,0-120,0)	100 250	220 - 260 11 - 15**		

./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.79

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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L3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
365 - 232/2	0,26	0,10	12,8 - 12,9 11,4 - 11,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 DAF 11,6c
3. Edition
En

PE 6 P 110/320 RS 198
A

RQ 200/1100 PA 24 R
RQV 200-1100 PA 37 R ./.
EP/RSV 200-1100 P 1/326 R ./.

supersedes 2.74
company: DAF
engine: DKA 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 $(^{+0,15}_{-0,05})$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,2 - 13,9	0,5			
600	9	6,4 - 7,6				
600	12	13,2 - 14,7				
600	15	19,0 - 20,9				
200	9	4,8 - 6,0				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

RQ 200/1100 PA24R

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
500	15,7-16,3	500	16,0	1120	15,6-16,0	440	0	100	6,7-8,1	-	-
				1150	7,7-13,5			200	4,4-6,5		
				1180	0 - 8,6			300	0 -2,2		
				1230	0			340	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
850	117,5 - 120,5 (115,5 - 122,5)				100	24,5 - 25,5

Checking values in brackets

2.77

L9

B. Governor Settings

RQV..PA 37 R

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1100	14,8-17,8					ca.12	100	6,3-8,0		
	1150	10,2-14,2						200	4,4-6,8		
	1200	5,7-10,4						300	3,3-3,8		
	1240	0- 7,2						500	1,7-3,1		
	1320	0					(3a)	700	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
see RQ		1120						

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

EP/RSV 200 - 1100 P 1/326

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1100	16,0					ca.29	200	6,0		
	1180	10,2		without auxiliary spring				100	19 - 21	1080	0
	1220	6,0						200	5,7-6,3		0
	1200	5,6-9,6						300	1,8-3,8	200	0,3-0,5
	1240	2,0-5,6		with auxiliary spring				400	0 - 1		
	1310	0 - 1					(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
		1120						
In accordance with special nameplate on pump!								

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

40

VDT-WPP 001/4 DAF 11,6 a
3. Edition

En

PE 6 P 110/320 RS 109

RQ 200/1100 PA 24 R
RQV 200-1100 PA 37 R
EP/RSV 200-1100 P1/326 R

supersedes 8.72
company: van Doorne
engine: DKA 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,2-13,9	0,5			
600	9	6,4- 7,6				
600	12	13,2-14,7				
600	15	19,0-20,9				
200	9	4,8- 6,0				

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

RQ .. PA 24 R

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
500	15,7-16,3	500	16,0	1100	15,7-16,0	490	0	100	6,9-8,1	-	-
				1140	4,8-12,4			200	4,4-6,4		
Breakaway not before n=1120				1170	0 - 7,2			300	1,6-3,8		
				1210	0			390	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1090	118,0 - 120,0	1120			100	ca.24
	(increase by 1,0 cm³)					./.

Checking values in brackets

11.75

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	(1) rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.68	1100 1150 1200 1240 1320	14,8-17,8 10,2-14,2 5,7-10,4 0 - 7,2 0						ca.12 (3a)	100 200 300 500 700	6,3-8,0 4,4-6,8 3,3-3,8 1,7-3,1 0		-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1090	118,0-120,0	1120			100	ca. 24		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

EP/RSV ..326

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	(1) rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.68	1100 1180 1220 1200 1240 1310	16,0 10,2 6,0 5,6-9,6 2,0-5,6 0 - 1		without auxiliary spring with auxiliary spring				ca.29 (3a)	200 100 200 300 400	6,0 19 - 21 5,7-6,3 1,8-3,8 0 - 1		1080 350 200	0 0 0,3-0,5

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
In accordance with special nameplate on pump!								

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 8,0 a
3. Edition

En

PE 6 P 100/720 RS140 — RQ 250/1250 PA102R
RQV 200-1200 PA101R ./.
PE 6 P 100 A720 RS201 — RQV 200-1200 PA170R ./.
EP/RSV 350-1200 P1/310R ./.

Port-closing test with/without ROBO diaphragm

supersedes 12.72
company: Scania
engine: DS 8

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	13,5	12,2-12,6	0,5			2,5 ± 0,1** (max. 2,2-2,9)
600	13,5	11,3-11,7				
225	6	1,0- 1,2				
1300	6	2,9- 3,4				

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

RQ.. 102R

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
750	15,6-16,4	750	16,0	1270	15,6-16,0	730	0	180	7,0-8,1		
				1320	10,3-14,4			250	5,5-6,8		
				1380	3,5-10,0			400	2,9-4,4		
				1420	0 - 7,8			500	1,3-2,8		
				1500	0			630	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	cm³/1000 strokes 7	Control rod travel mm
1200	123,0-125,0 (13,5±0,5mmRW)		600	113,0-117,0	100	190 - 240	
					225 dispersion	11 - 13 max.1,5)**	
					1300 dispersion	29 - 34 max. 4)	
						./.	

Checking values in brackets

10.77

L15

B. Governor Settings

RQV..101R, 170R

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
ca.66	1240 1300 1450 1590	15,0-17,6 11,3-14,9 0,6- 7,4 0		-	-	-	ca.10 (3a)	100 250 400 530	6,4-8,0 3,9-6,0 1,7-3,2 0	300 600 1240	1,6-2,4 4,3-4,6 8,2

(1)

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1200 (13,5	123,0-125,0 ± 0,5mm RW)	1230-1240*	600	113,0-117,0	100 225 1300	190 - 240 11 - 13 dispersion.max.1,5) 29 - 34) dispersion max. 4	**	

Check values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO

B. Governor Settings

EP/RSV..310R

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
ca.71	1200 1250 1300 1250 1320 1420	16,0 11,9 6,3 10,8-12,4 2,4- 6,0 0,3- 1,0		without auxiliary spring with auxiliary spring			ca.31 (3a)	350 100 350 400 520	6,0 19 - 21 5,7-6,3 3,3-4,5 0 - 1		

Torque control travel a = ...m

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Idle stop	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1200 (13,5	123,0-125,0 ±0,5 mmRW)	1230-1240*	600	113,0-117,0	- 225 1300	- 10 - 14 dispersion.max.1,5)** 34 - 44 dispersion.max. 4)	350	6,0

Checking values in brackets

* 1 mm less control rod travel than col 2